



# FOREST HEALTH PROTECTION

## Pacific Southwest Region

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### **Examination Of A Failed Ponderosa Pine Burned In The 1999 Pendola Fire, Downieville Ranger District, Tahoe National Forest**

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#### BACKGROUND/OBSERVATIONS

On May 26, 2000, I examined a ponderosa pine that failed because of strong winds on October 16, 1999. The tree had been growing in a stand with an overstory of primarily large ponderosa pine and some incense cedar. It was tall enough to hit a nearby power line when it fell, and this is believed to have started the Pendola Fire. The purpose of my examination was to determine whether this tree had visible external defects that could have been detected by an inspector prior to its failure.

When I visited the site, the bole had been cut into several pieces during fire suppression activities. The ponderosa pine had been cut off at a height of 45 inches above ground line, and the stump was 40.1 inches in diameter at this point. The tree was approximately 170 feet tall and had broken off at a height of 21 feet and fell toward a bearing of 208 degrees (southwest). A count of annual rings at the stump indicated an age of 127 years.

There was a large pocket of decay on the side of the tree facing away (uphill) from the direction of failure. The decay started just above the soil line and continued 13 feet above the failure point for a total length of 34 feet. This decay was in the outer sapwood, and at the stump, occupied 38% of the tree's circumference. At many places the column of rot was 12 inches or more thick. There were no fungal fruiting bodies present that would identify the specific species of fungus causing the decay, but it was a brown cubical rot. Brown rots are some of the most common decay fungi in California conifers. These decay fungi require a wound or break in the living

inner bark and cambium in order to gain access to the sapwood and/or heartwood. Common

wounds that provide entry courts for decay fungi include logging (mechanical) injuries and fire scars. The appearance of this pine suggests that an old fire scar was present.

Brown rotted wood is usually very dry compared to living sapwood. The Pendola Fire burned away part of the decayed wood at the base of the tree, creating a flat surface. Higher up on the bole, the fire burned more of the decayed wood and left a cavity.

The tree broke off within the section of bole affected by decay. Although the actual breakage point was in several pieces, a visual estimate showed about 25-30% of the tree's cross sectional area was decayed.

Several strands of barbed wire fencing were embedded within the decayed wood at the base of the tree. It is unlikely that the wire caused this extensive column of decay. Trees normally grow over small objects like wire and encase them in sound, living tissue. Other trees in the area had overgrown wire fencing with little or no associated decay.

#### DISCUSSION/CONCLUSIONS

1. The pocket of decay in this pine was very large and was affecting the outer sapwood. It would have taken many years to develop and was certainly present well before the Pendola Fire.
2. A close inspection of the pine prior to the fire should have detected the decay. Even if some of the decay pocket was covered with bark, the bark would have been dead, very loose and easy to remove, revealing the underlying defect. When such decay indicators are present on a tree, a more thorough evaluation of failure potential is required.

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